U.S. Fish & Wildlife Service

Recovery Report to Congress

Fiscal Years 2001-2002

On the Cover: Counter clockwise from the top - Columbia white-tailed deer from the Douglas County, Oregon distinct population segment (DPS), USFWS photo; leaf from the Virginia round-leaf birch, photo courtesy of D. Ogle; Johnston's frankenia, Texas Parks and Wildlife photo; and Eggert's sunflower, B. Bingham, USFWS photo. These species are improving and have reached, or almost reached their recovery goals, as of September 30, 2002.

This report and copies of recovery plans are available electronically at the Service's internet site at: http://endangered.fws.gov/recovery.

Copies of this report are also available from:
U.S. Fish and Wildlife Service
Endangered Species Program
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203

Further information on the recovery program is available at the Service's website at: http://endangered.fws.gov/recovery/.

In addition, the Service has actively sought to improve the overall national implementation of the Act and has developed a suite of national policies. This information is available electronically at: http://endangered.fws.gov/policies/.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

ADDRESS ONLY THE DIRECTOR
FISH AND WILDLIFE SERVICE

Director of the U.S. Fish and Wildlife Service

Over the past few years, we have made significant improvements in the status of many species. The Robbins' cinquefoil and Aleutian Canada goose, for example, have been removed from the List due to recovery and the large-flowered skullcap has been downlisted from endangered to threatened. In addition, 450 species are considered to be stable or improving, some of which are reaching their recovery goals and may be delisted in the near future. We are also making steady progress on the recovery of many other species. For example, 85 percent of listed species have draft or final recovery plans that guide us towards the long-term goal of downlisting or delisting. Significant accomplishments have also been made in implementing on-the-ground recovery actions, which help move species farther along the path of recovery.

Despite these recent successes, however, a substantial amount of recovery work remains to be undertaken and completed. We need to do more for declining species and species whose overall population status is uncertain. We also need to focus on the big challenge of initiating 5-year reviews under section 4(c)(2) of the Act. The purpose of these reviews is to determine whether a species current classification (threatened or endangered) is still accurate in light of new information. Conducting reviews for over 1,200 species while continuing to develop recovery plans, revise older plans as needed, and implementing high priority recovery actions will be extremely challenging. The Service has asked for a Recovery Program funding increase in the FY 2004 President's Budget to address these needs.

This 2002 report provides an update on the recovery of listed species between October 1, 2001, and September 30, 2002, and chronicles the progress of all partners' collective efforts.

Steve Williams

"Working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Report to Congress on the Recovery of Threatened and Endangered Species

Background

The primary purpose of the Endangered Species Act of 1973 [16 U.S.C. 1531 *et seq.*] (Act) is the conservation of endangered and threatened species (listed species) and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these species so that they no longer need the protective measures of the Act.

The Act requires the Secretaries of the Department of the Interior (DOI) and the Department of Commerce (DOC) to develop and implement plans for the conservation and survival of listed species ("recovery plans"). Recovery plans are required under section 4(f)(1) of the Act for all listed species, unless the plans will not promote the conservation of the species (section 7(a)(1)).

The Act also requires that the Secretaries report to Congress every two years on the status of efforts to develop and implement recovery plans, and the status of all species for which recovery plans have been developed. This report satisfies these two requirements. We choose to report the status of listed species without recovery plans in addition to those with recovery plans.

The U.S. Fish and Wildlife Service (Service), under the DOI, and the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) (formerly National Marine Fisheries Service (NMFS)), under the DOC, have been delegated the responsibility of administering the Act. In general, the Service has responsibility for freshwater and terrestrial species, while NOAA Fisheries has responsibility for most marine species and anadromous fish. Currently, the Service and NOAA Fisheries share the responsibility for the following ten listed species: the Atlantic and Pacific populations of both the green and olive ridley sea turtles; the hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles; the Atlantic salmon; and the gulf sturgeon. Additional information on these joint species may be found in the NOAA Fisheries Office of Protected Resources' "Biennial Report to Congress on the Recovery Program for Threatened and Endangered Species: October 1, 2000 – September 30, 2002."

This report satisfies the Act's reporting requirement for October 1, 2000 to September 30, 2002, (reporting period) for U.S. species solely under the Service's jurisdiction, as well as those managed jointly with NOAA Fisheries.

> *The term "species" as used in the Act and this report includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.*

Introduction

Under the law, any species of fish, wildlife, or plants, except pest insects, can be added to the List of Threatened and Endangered Species (listed) if they are in danger of extinction throughout all or a significant portion of their range (Endangered) or are likely to become an endangered species within the foreseeable future throughout all or a significant portion of their range (Threatened). Species are placed on the threatened and endangered species list due to one or more of the following five factors: (a) the present or threatened destruction, modification, or curtailment of its habitat or range; (b) overutilization for commercial, recreational, scientific, or educational purposes; (c) disease or predation; (d) the inadequacy of existing regulatory mechanisms; and (e) other natural or manmade factors affecting its continued existence.

The threatened swamp pink is one of the most unique and beautiful wildflowers in the Eastern United States. USFWS photo.

Recovery Overview

Recovery is the process by which listed species and their ecosystems are restored, and their future is safeguarded to the point that protections of the Act are no longer needed (i.e., the threats are reduced or removed). A variety of actions may be necessary to achieve the goal of recovery, such as creation of new, or restoration of existing, habitat or reintroduction of the species into suitable habitat. "**Recovery plans**"[1] are central to the recovery of listed species, but are not regulatory documents. Recovery plans (using the best scientific and commercial data available) serve as the road map for the species' recovery, laying out where we need to go, how best to get there, and how long we think it will take. Only under certain circumstances (i.e., a recovery plan will not promote the species conservation) is a species exempt from the requirement to develop a recovery plan.

A recovery outline—the first step in recovery planning—establishes the initial direction for conservation efforts and guides the development of a recovery plan. Draft and final recovery plans are then developed and implemented with stakeholder involvement. The plans organize, prioritize, and guide the recovery process, and establish objective criteria by which to measure progress toward recovery. The plans also identify who the responsible parties are to implement the on-the-ground recovery actions. Recovery plans may be amended, revised, or updated along the way when new information that may impact the species' recovery (new threats or genetic information, etc.) becomes available.

The importance of having a guiding document in recovery of species has been recognized since 1972, when the Service developed its first draft recovery plan. Thirty years later, it has been formally recognized that the longer a species has been listed and the longer that it has had a recovery plan, the better its status (Schultz and Gerber. 2002. Are Recovery Plans Improving With Practice? Ecological Applications 12: 641–647).

The endangered California red-legged frog is the largest native frog in the Western United States, and is believed to be the title character of Mark Twain's famed short story, "The Celebrated Jumping Frog of Calaveras County.". R. Smith, Curator of Reptiles, Los Angeles Zoo photo.

Unlike a common house fly, the endangered Delhi Sands flower-loving fly feeds on nectar and mimics the pollinating behavior of such species as the hummingbird, butterfly, and honey bee. USFWS photo.

[1] Bolded terms in quotation marks correspond to items reported in Appendix 1.

Status of Listed Species

The first priority for the recovery of any listed species is to prevent its extinction. Species with the highest degree of threat have the highest priority for preparing and implementing recovery plans. These critically endangered species need immediate and often intensive intervention just to prevent extinction. These are the species for which captive breeding is sometimes the only measure enabling the species to persist until the threats in the wild are reduced or eliminated and the species can be reintroduced to formally occupied habitat. We assign a "**recovery priority number**" to species to help guide the allocation of resources for recovery planning and implementation among all listed species. The recovery priority number is based on the degree of threat faced by the species, along with the species' potential for recovery and genetic distinctness. A "C" following the number indicates that there is the potential for conflicts between needed recovery actions and economic activities.

Species' declines have often been occurring over the course of decades or centuries prior to their listing. Addressing long-running threats typically requires substantial time and resources. Many of our species also face more recent threats, and some may even be faced with new threats after receiving protection under the Act. Therefore, during a period after listing, most species have declining population numbers. Our progress on reducing or removing threats may be minimal at this time as well. Threats are easily magnified simply by the continued decline in species numbers (for example, disease may have a greater chance of eliminating a smaller population). Unfortunately some threats, such as the threat posed by invasive, nonnative species, may continue to increase for some time following listing. Reaching recovery objectives is therefore likely to be far in the future. So although the rate of decline soon after listing may be the same, greater, or less than prior to listing, the species status during this period is usually reported as "**declining**."

Information on listed (particularly newly listed) species, including basic information on population numbers and threats is often lacking. The reasons for this lack of information vary and cannot all be easily resolved. Population surveys can be costly, can be quickly outdated and no longer representative of current conditions, have low confidence levels, or can be damaging or lethal to the species and therefore may be implemented sparingly, if at all. Monitoring the effect that a threat is having on a species is an important component to assessing a species status, but this information can also be lacking. Given that some species may need additional survey work before a declining, improving, or stable determination can be made, these species are reported as "**uncertain**."

To be successful, recovery activities must reverse declines. One indicator that a reversal may be underway is when the decline halts. Improvement may not be occurring or may not yet be detectable. Where the species numbers and threats remain constant, the species is reported as "**stable**."

Over time, as more information about listed species becomes available from surveys and research, and species begin benefiting from management and protection efforts aimed at reducing and/or eliminating threats, increasing numbers of listed species are expected. Although the amount of time for response varies depending upon the species, the reduction and removal of threats should [2] result in an increase in population numbers. It must be noted, however, that the length of time it takes to see a response in species numbers following the threat reduction or removal is dependant upon some factors (such as the age the species becomes reproductively mature) that are beyond the control of the Act and is often unrelated to the amount of financial resources expended. Species that do show a positive response, however, are reported as "**improving**".

As recovery progresses, it is often possible to downlist (change listing classification from endangered to threatened) the species. This determination means that the species is no longer in danger of extinction throughout all or a significant portion of its range. Downlisting objectives and criteria for endangered species are outlined in the species' recovery plan.

Delisting results in the removal of regulatory restrictions. To delist a species due to recovery, the Service must determine based on the best scientific and commercial data available, that the species is not in danger of extinction and is not likely to become so in the foreseeable future. The determination is based on a number of factors, such as population size, recruitment, stability of habitat quality and quantity, and control or elimination of the threats that caused the need to list the species. When a species has been recovered and subsequently delisted, the Act requires the Service, in cooperation with the States, to monitor the species status for a minimum of five years.

Despite all our best efforts species may have declined to the point where they occur now only in "**captivity**," and do not exist anywhere in the wild, or they may be believed to be "**extinct,**" but remain on the list until extinction is confirmed after several years of intensive surveys and completion of formal rule-making to delist. Sometimes species are only in captivity or possibly extinct even before they are listed.

[2] Some critically endangered species may not respond due to limiting factors such as small population size that has limited or suppressed reproduction. Herculean efforts may be needed before an increase in population may be seen. It may even be that preventing extinction is the best that can be done with the current scientific information, although the future may bring advances enabling the population to improve.

Methods

The Director of the Service has delegated responsibility for recovery of listed species to the Service's seven Regional Directors across the nation. Each listed species is the responsibility of at least one Region. When the distribution of a species crosses regional boundaries, the "**lead Region**" coordinates decisions regarding the species among other Regions. Regional Directors ensure that recovery plans are developed for those species that need plans, appoint recovery team members if a team is appropriate, direct recovery plan implementation, and coordinate these efforts with our partners and stakeholders. (The boundaries of Service's Regions and the location of Regional Offices are illustrated on the inside back cover page - "Endangered Species Program Contacts".)

As required by the Act, our Field and Regional staff report every two years on their efforts to develop and implement recovery plans and the status of listed species. To make these determinations they use the best available information from recovery planning and implementing efforts, our consultation process with other Federal agencies under section 7 of the Act, our permitting program under section 10 of the Act, our petition process under section 4 of the Act, our coordination with States, and other activities related to listed species.

The results should be viewed only in light of the Act's recovery reporting requirement. These results are not intended to provide status review results such as are available after a 12-month finding or a 5-year review. They are intended only to simplistically represent the relative progress that is being made on listed species. Progress is not solely in the purview of the Service, and therefore, should not be used as the only measure of the effectiveness of the Service's Recovery Program.

Tom Stehn, USFWS Whooping Crane Recovery Coordinator and 2002 Recovery Champion. See "Recovery Initiative" on next page for more information. USFWS photo.

The endangered whooping crane population now has approximately 452 individuals, with a new eastern migratory population started in 2001. USFWS photo.

Status of the Recovery Program 2000-2002

The change in millennium brought both a look back and a look forward for the recovery program. An internal and external review of specific aspects of the recovery program (recovery plans and reporting requirements) was part of the impetus for the recovery initiative launched to take the recovery program into this millennium.

Science and Recovery Plans

A recent partnership to ensure the effectiveness of our recovery plans took the form of a comprehensive three-year study conducted by the Society of Conservation Biology (SCB), with our collaboration, on the science in recovery plans. Academic conservation biologists from universities across the country lead research seminars on recovery planning, which often focused on specific aspects of recovery plans (e.g., single species vs. multi-species recovery plans, revised vs. unrevised plans). SCB worked with us to design and implement a study that would be relevant and responsive to the needs of the Act, policymakers, and recovery biologists. We participated in this study to see how well we have been incorporating scientific principles into recovery plans.

From the analysis of recovery plans for 181 species, the study identified a number of strengths and weaknesses in past and current recovery plans. Among these recommendations are the need to focus more on threats as a unifying theme; focus more on monitoring; and provide clearer and more consistent linkage between the biology of the species and the recovery criteria and actions identified in the recovery plan.

What is Working?

■ Species with recovery plans in place for longer time periods show more improvement in status

■ Most recovery plans are being implemented to some extent

■ High priority recovery actions are more likely to be implemented than lower priority actions

■ Identification of threats in plans builds on listing documents

What has Improved?

■ Use of active management is increasing

■ Emphasis on monitoring species is increasing

■ Recovery criteria are increasing in specificity

■ Scientific tools, such as population viability analysis, adaptive management, and metapopulation modelling, are being used more frequently

What Needs More Improvement

■ Explicit addressing and monitoring of threats

■ Diversity of contributors (while keeping teams small)

■ Monitoring of: species trends, threats, implementation, effectiveness of implementation, and recovery criteria

■ Internal consistency of plans, i.e., connecting biological information to recovery criteria/actions

■ Inclusion of new science and theories

■ Elimination of taxonomic biases

■ Prioritization of species' plans for implementation and revision

■ In multi-species plans, addressing of individual species needs, revisions, and implementation

■ Addressing of needs for critical habitat management, where designated

We are addressing many of these shortcomings through development of improved recovery planning and implementation guidance.

Recovery Program Audit

The Office of the Inspector General (IG) conducted a review of selected threatened and endangered species program activities undertaken by the Pacific and Southeast Regions (see Endangered Species Contacts page) from October 1, 1994, through December 31, 2000, including a limited review of internal controls applicable to the biennial reporting requirement and annual expenditures data. The Final Report "Reporting and Recovery Planning and Implementation for Endangered Species, U.S. Fish and Wildlife Service" was issued on April 8, 2003, and provided recommendations for improving the biennial report. We have made significant progress in implementing these recommendations. The recommendations were to 1) perform periodic reviews to ensure the accuracy of the information in this report; 2) improve the guidance to our Regional and field offices to ensure the data in the report are consistent and supported by sufficient evidence; 3) include additional species data in the report to improve its usefulness in measuring the progress of recovery efforts; and 4) provide the report in a more timely fashion.

The following changes have been made to implement these recommendations:

■ Additional reporting guidance has been developed to assist the field, Regional, and Washington Offices in inputting data more accurately, and beginning with the FY 2003 reporting cycle, implemented periodic review of recovery information. The Regional Offices reviewed and verified the field office data prior to submission to the Washington Office. The Washington Office then conducted a targeted review of the data, and as appropriate, requested clarification.

■ Additional species information has been included in the Appendix I species report, such as the date the species was listed, the date of the species' first final recovery plan, and the date of the species' current recovery plan.

Recovery Initiative
As a way to highlight our ongoing success and acknowledge the work we have left to do, the Recovery Program embarked on a "Recovery Initiative" in FY 2001. The goals of this campaign are to boost recovery accomplishments by: identifying and communicating recovery opportunities throughout Service programs; strengthening the participation of partners, both internal and external; and developing sound guidance for more integrated endangered species recovery activities. To kick off the Initiative, the Program held its first National Workshop in November 2002, bringing together recovery staff from around the country. Focuses of the workshop included encouraging stakeholder participation in recovery planning and implementation; receiving feedback on improved recovery planning guidance; disseminating the latest information on tools and issues; and recognizing our own colleagues through the Recovery Champion awards, for the great work they do day-to-day to achieve recovery for listed species.

Growing Threats
New threats to listed species including introduced disease such as the West Nile virus and exotic, invasive species such as the Chinese snakehead fish (*Channa asiatica*) appeared during this reporting period. These invasive species, as well as other lesser known ones (at least on a national scale) such as crownvetch (*Coronilla varia*), pose a tremendous threat to threatened and endangered species and their ability to recover. Communication will play a critical role in addressing these and other threats that have the potential to negatively impact numerous listed species, and their potential to reach recovery, over wide geographic areas.

Partnerships
An example of a unique Service partnering project is the Pacific Islands Office's Conservation Partnerships Program (CPP). The CCP is a collection of voluntary habitat restoration programs with the goal of restoring native Pacific Island ecosystems through collaborative projects. There are five program elements: Hawaii Biodiversity Joint Venture is a public-private conservation effort; Partners for Fish and Wildlife is a cost-sharing and technical assistance program; Pacific Islands Coastal Program identifies important coastal resource problems and solutions, develops partnerships to carry out on-the ground conservation projects, and encourages community action; Hawaii ESA Community Conservation Initiative is a unique Service program designed to engage landowners and community groups in the implementation of conservation actions to benefit listed species; Private Stewardship Grants Program is one of the cost-share opportunities for the high-priority habitat restoration needs of listed and candidate species on private lands; and, under the Watershed Partnership Assistance, the CPP works with watershed partnerships and other multi-landowner groups to assist in coordination and implementation of conservation actions over broad landscapes. The CCP partnering project clearly epitomizes the Service's mission - *"Working with others, to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."*

An example of the CCP at work is the Imi Pono no ka 'Aina Partnership. Imi Pono no ka 'Aina means "Seeking Good for the Land." This partnership is an environmental education program in conjunction with Hawaii Volcanoes National Park, U.S. Army, and the Hawaii Department of Education. The goal of this project is to increase the sense of stewardship and involvement of the public on the island of Hawaii regarding their native ecosystems. To accomplish this, funds were provided to a cooperator to conduct environmental education programs in public schools in the Hilo, Puna, and Hämäkua areas. The program educator establishes field study sites and presents information to students, teachers, and the general public that conveys the value of natural resources and types of challenges facing managers of native Hawaiian ecosystems. The students gain hands on experience in protecting and preserving native species and their habitats by working with resource managers. By teaching Hawaii's children about the fragile nature of their ecosystems, it is hoped that they will grow to appreciate and conserve the native species and their habitats.

The ecosystems that listed species depend on for food, shelter, and the rearing of offspring often take years or even decades to be restored. It is essential to educate the next generation of decision makers, now, to ensure that our listed species recovery programs continue to make progress. More and more recovery plans include outreach and education as one of the recovery criteria against which recovery progress will be judged.

Imi Pono no ka Aina Partnership students tagging a sea turtle for researchers to learn more about the movement of sea turtles when at sea. USFWS photo.

Species Highlights

The following success stories of the Robbins' cinquefoil, Aleutian Canada goose, and the large-flowered skullcap highlight not only the good news that species are being downlisted and delisted under the Act, but also the unique partnerships that developed during implementation of their respective recovery efforts.

The endangered Robbins' cinquefoil was delisted in 2002 due to recovery. S. vonOettingen, USFWS photo.

Robbins' Cinquefoil (Potentilla robbinsiana)
Marking the successful recovery of the Robbins' cinquefoil, a small alpine perennial herb in the rose family (Rosaceae), we published a final rule on August 27, 2002, removing this plant from the list of endangered and threatened species. Its main population now contains more than 14,000 plants, and 2 transplant populations have reached or surpassed minimum population targets.

The Robbins' cinquefoil is endemic to a harsh alpine environment in the White Mountain National Forest of New Hampshire. Its recovery was made possible through collaborative efforts of the Service, U.S. Forest Service, Appalachian Mountain Club, and New England Wildflower Society to reroute a hiking trail and grow plants for transplanting back into the wild. The delisting rule included a proposed 5-year monitoring plan, as required for species that are delisted due to recovery. This plan will include monitoring of population trends of both natural and transplanted populations through a continuing partnership with the Appalachian Mountain Club's Research Department and the Forest Service.

Aleutian Canada Goose (Branta canadensis leucopareia)
The Aleutian Canada goose is a small, island nesting subspecies of the Canada goose. It currently migrates from nesting areas in the Aleutian Islands of Alaska to wintering grounds in California. Its historic range includes portions of Russia and Japan. On March 20, 2001 the Service published a final rule delisting the Aleutian Canada goose due to recovery. The final rule also included the outline of a monitoring plan for the goose, which is required for at least five years after delisting. The removal of introduced arctic and red foxes from some of the goose's nesting islands, establishment of new colonies of geese on fox-free islands using captive-reared and wild family groups of geese, protection from hunting and disease, and protection and management of migration and wintering habitat were the primary factors that contributed to the goose's recovery.

The State of California, private landowners, and the Russian and Japanese governments have been active partners in the recovery of the Aleutian Canada goose. Wintering habitat in California is primarily agricultural lands where they feed on grass, waste beans, and grain. Most of these agricultural lands are privately owned, some of which have conservation easements. The remainder is State and Service owned. Conservation easements are designed to benefit the species by providing winter foraging habitat for the goose while farming activities continue. Russian and Japanese wildlife agencies have also worked with the Service to reintroduce goose populations into portions of its historic range in those countries. The monitoring plan for the goose calls for monitoring population size on wintering and migration areas, monitoring productivity of the Semidi Islands population segment on the wintering

The endangered Aleutian Canada goose was delisted in 2001 due to recovery. USWFS photo.

grounds, and monitoring the status of breeding birds on nesting islands in Alaska.

Large-flowered Skullcap (Scutellaria montana)
The large-flowered skullcap is a perennial herb of the mint Family (Lamiaceae) found in several counties in Tennessee and Georgia, and flowers from mid-May to early June. On January 14, 2002, the Service published a final rule to reclassify the large-flowered skullcap from endangered to threatened, due to substantial improvement in the species' status.

Since its listing in 1986 when only 10 occurrences (10 populations) were known, an additional 74 occurrences (48 populations) have been discovered, and the total number of plants has increased from approximately 6,700 to over 50,000. The Service is working with the Tennessee Valley Authority, the Tennessee River Gorge Trust, the Georgia Department of Natural Resources, the Tennessee Natural Heritage Program, the Chattahoochee National Forest, private landowners, and others on further recovery of the species.

Results

Appendix 1 shows the following information for each of the 1,254 species under the jurisdiction of the Fish and Wildlife Service (including the 10 species where we have joint jurisdiction with NOAA Fisheries): lead region, listing date, date of first final recovery plan, stage of the recovery plan (under development, draft, final, revision), date of the current plan, listing classification (threatened or endangered, and if there is critical habitat designated), recovery priority number, population status, and recovery achieved. Below under the "Results" section are summarized statistics for these species, including "**recovery plan development stage**", "**population status**", and "**extent of recovery objectives achieved**" (as of September 30, 2002). For purposes of the statistics that follow, all recovery "entities" are referred to as species [3].

Table 1. Total Number of Recovery Plans For All Listed Species (data as of September 30, 2002)

Type of Plan	#	%
Exemptions from recovery plans	13	1
Plans in first stages of development	182	15
Draft plans	48	4
Final approved recovery plans	1011	81
Total Species	1254	
Final plans under revision	77	8

Recovery Plans

Recovery plans organize and prioritize the actions necessary to bring about the species' recovery and provide the criteria that will be used to measure the species' progress toward recovery. Recovery plans may be written for just one species, multiple species, or whole ecosystems. Final plans are published after the publics' comments have been incorporated. Plans are kept current through updates, amendments, and revisions [4].

During October 1, 2000, through September 30, 2002, the Service completed 11 draft, 16 final, and 9 revised recovery plans, which together cover 68 species. Table 1 shows the total number of recovery plans under development, as well as in draft, final, and revised form for all listed species.

Despite the 46 species added to the list between October 1, 2000, and September 30, 2002, the Service has maintained a marked improvement in the proportion of species with final recovery plans. For example, in 1994 only 54% of the 893 then listed species had final plans, while by the end of this reporting period 81% of 1,254 listed species had final plans. Eight percent of final recovery plans are currently under revision, highlighting the need to keep plans current for species that have been listed for a number of years, and to reflect new information that would affect recovery.

An endangered Oahu tree snail which is threatened by predation by the introduced carnivorous snail, Euglandia rosea, predation by rats, and loss of habitat due to the spread of non-native vegetation into higher elevations on the island of O'ahu, Hawaii. USWFS photo.

[3] For several listed species, multiple recovery "entities" have been established to address specific recovery planning needs. For example, there are three recovery entities of piping plover (Atlantic Coast, Great Lakes, and Northern Great Plains).

[4] Only revisions to final plans are tracked and reported here.

Recovery Priority

The recovery priority number reflects the degree of threat faced by the species, along with the species' potential for recovery and genetic distinctness (i.e., whether it is a monotypic genus versus a subspecies). A "C" following the number identifies that there is the potential for conflicts between needed recovery actions and economic activities. Ranking ranges from a high of 1C down to 18 (as shown in Table 2).

Recovery priorities do not change often. However, changes to the recovery priority number do sometimes occur because of increasing or decreasing threats and/or resolution of taxonomic questions (e.g., a species has been broken into two subspecies).

Results from the analysis conducted by The Nature Conservancy show that habitat loss and degradation and invasive species are the two leading causes for species decline and imperilment (The Nature Conservancy's *Precious Heritage*, 2000).

■ Habitat loss and degradation are the first ranked threat, contributing to the endangerment of 85% of imperiled and federally listed species.

■ Alien species is the second-ranked threat, affecting 49% of imperiled and federally listed species.

Table 2. Recovery Priority Number Chart

Degree of threat	*Recovery potential*	*Taxonomy*	*Priority*	*Conflict*
High	High	Monotypic genus	1	1C
High	High	Species	2	2C
High	High	Subspecies	3	3C
High	Low	Monotypic genus	4	4C
High	Low	Species	5	5C
High	Low	Subspecies	6	6C
Moderate	High	Monotypic genus	7	7C
Moderate	High	Species	8	8C
Moderate	High	Subspecies	9	9C
Moderate	Low	Monotypic genus	10	10C
Moderate	Low	Species	11	11C
Moderate	Low	Subspecies	12	12C
Low	High	Monotypic genus	13	13C
Low	High	Species	14	14C
Low	High	Subspecies	15	15C
Low	Low	Monotypic genus	16	16C
Low	Low	Species	17	17C
Low	Low	Subspecies	18	18C

The razorback sucker is an example of a 1C species, a species with a high degree of threat and a high potential for recovery, but is in conflict with economic activities. USFWS photo.

Status of Listed Species

All taxonomic groups are vulnerable to threats that lead to their being listed as threatened or endangered (see Table 3).

For the period October 1, 2000, to September 30, 2002, 30% of listed species are reported as stable, 6% as improving, and 21% as declining (see Figure 1). We are uncertain of the status of 39% of the species. Additionally, 1% of listed species are only found in captivity and 3% are believed to be extinct.

This report does not show the success of the Service and its partners in preventing extinction. In an independent study published in the Annual Review of Ecological Systematics in 1999 (M. W. Schwartz), it was estimated that without the Act, 172 species might have been expected to become extinct during the 25-year period from 1973 to 1998, when in fact only seven species were determined to have gone extinct.

Figure 1. Percentage of Listed Species Per Status Categories (data as of September 30, 2002)

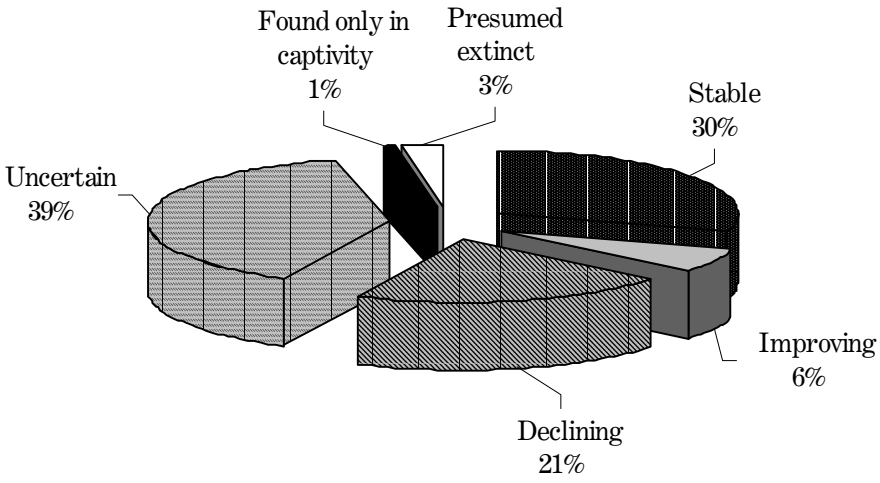


Table 3. Listed Species by Taxonomic Group (data as of September 30, 2002)

Taxonomic Group	*# of Species*	*% of Total*
Mammals	65	13
Birds	94	18
Reptiles	42	8
Amphibians	23	4
Fish	110	21
Invertebrates	179	35
Total Animals	*513*	*100*
Flowering Plants	705	95
Non-flowering Plants	38	5
Total Plants	*743*	*100*
Total Species	1256	

The endangered Madla's Cave meshweaver is a narrow endemic cave adapted species, meaning it is found in only a handful of caves in Bexar County, Texas. J. Krejca, USFWS photo.

Changes in Species Status Over Time
Often times, actions are needed immediately after listing just to prevent a species from becoming extinct. Recovery activities must first halt, then reverse, declines. Addressing the long-term threats that often have occurred over the course of decades or centuries typically requires substantial time and resources. In addition, the response time of a species to the implementation of actions is highly variable, mostly due to their life history (time to maturation, etc.). Therefore, we do not anticipate seeing stable or improving status for a species in the early years following its listing.

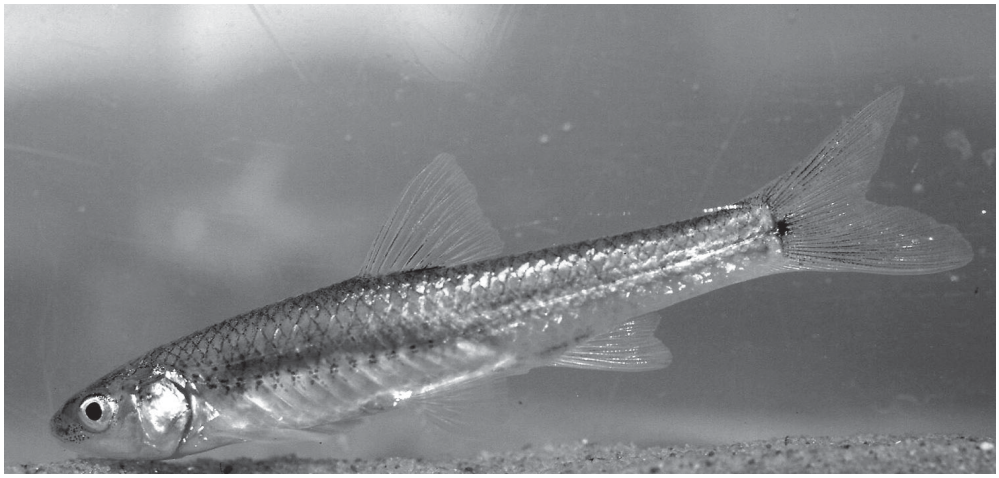
During the first few years after listing, most species populations have an uncertain or declining status. As mentioned above, as of September 30, 2002, the status of 39% of listed species is reported as uncertain. Additional information on species population numbers or threats is needed before their status can be determined. Of these species, 30% have been listed for 5 years or less and 41% have been listed for 6 years or more. However, Table 4 does reflect that, in general, the longer a species is listed the better the chance of it being reported as stable or improving.

The high percent of species reported as uncertain which have been listed 6 years or more may be a result of clarification of the definitions used in previous reports and/or the increasing challenge in maintaining up to date species information for an increasing number of listed species. Often the information used for reporting is generated as the result of opportunities that arise from developing Habitat Conservation Plans (HCPs), biological assessments for section 7 consultations, and from the implementation of recovery activities. These opportunities are not equal for all listed species.

Table 4. Changes in Status Over Time
(data as of September 30, 2002)

U.S. Species under jurisdiction of the Service (or jointly with NOAA Fisheries) with status as - -	*% Species listed 5 years or less* [1]	*% Species listed 6 or more years*
Stable	22	31
Improving	3	7
Declining	45	18
Uncertain	30	41

[1] *Note: totals may not add to 100% because species in captivity and/or possibly extinct are not included.*



Planned restoration activities for the threatened Arkansas River shiner include enhancing mixed-grass and prairie stream habitat through altered grazing management, prescribed burning, and cutting of invasive woody species. K. Collins, USFWS photo.

Other common names for the endangered freshwater pink mucket (pearlymussel) include the Ohio mucket, tan mucket and square mucket. USFWS photo.

Downlisting and Delisting Actions
Successful implementation of recovery actions over time leads to improvement in a species status and eventual downlisting (reclassification from endangered to threatened) and delisting. Recovery plan criteria are the measurements by which recovery progress is judged. When an endangered species has successfully met its criteria it is downlisted. During the reporting period October 1, 2000, to September 30, 2002, the large-flowered skullcap was downlisted from endangered to threatened.

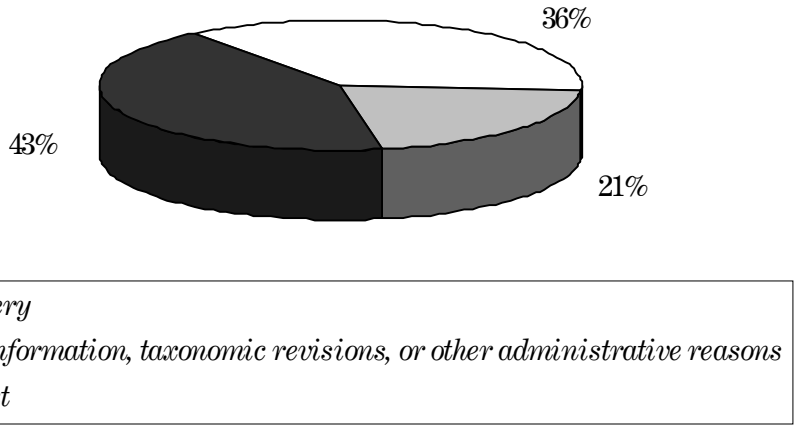
The Code of Federal Regulations (50 CFR 424.11) specifies three situations in which the protections of the Act may be completely removed (delisting) for a species: because it has been recovered; and/or because of new information, taxonomic revisions, or other administrative reasons; or because it has gone extinct. Thirty-five of the 1,256 species (3%) in Appendix 1 are believed to be extinct. Reporting species as possibly extinct does not necessarily reflect a failing of the Act as some of these species may already have been extinct at the time of listing. Surveying for species that are in such small populations that they are believed extinct is highly difficult. In the past, species may have been listed without confirmation of presence. Confirmation of extinction can be equally problematic and species may remain reported as possibly extinct for a number of years before sufficient surveys are conducted to confirm extinction and rulemaking to remove them from the list is completed. A species cannot be declared extinct until the rulemaking process (proposed rule - public comment - final rule) is completed.

Although downlistings and delistings due to recovery have been infrequent (see Figure 2), they do occur. As of September 30, 2002, 43% (14) of the total number of delistings (33) have been due to recovery, 36% (12) due to new information, taxonomic revisions, or other administrative reasons, and 21% (7) due to extinction (figure 2). The number of delistings due to recovery may be on the rise, however. For example, during the reporting period October 1, 2000, to September 30, 2002, two species, the Aleutian Canada goose (*Branta canadensis leucopareia*) and the Robbins' cinquefoil (*Potentilla robbinsiana*) were delisted due to recovery. The final rules announcing the delisting of the Aleutian Canada goose and Robbins' cinquefoil were published in the *Federal Register* on March 20, 2001 (66 FR 15643) and August 27, 2002 (67 FR 54968), respectively.

In addition, five other species were proposed for delisting. These species include three proposed for delisting due to recovery, the Truckee barberry (*Berberis (=Mahonia) sonnei*), the Douglas County, Oregon population of the Columbian white-tailed deer (*Odocoileus virginianus leucurus*), and the Hoover's wooly-star (*Eriastrum hooveri*); and two proposed for delisting due to extinction, the Guam broadbill (*Myiagra freycineti*) and the Mariana mallard (*Anas oustaleti*).

There are two populations of piping plover, one endangered and one threatened. This species has been observed on over 90 National Wildlife Refuges or Wildlife Management Areas. Photo courtesy of C. Perez.

Figure 2. Summary of Delisting Actions
(data as of September 30, 2002)



Recovery Achieved

The goal of all but a few recovery plans is to delist the species [5]. We know when a species may be ready for downlisting or delisting by measuring their status against the tangible objectives and criteria developed in its recovery plan. For example, the Atlantic coast piping plover recovery plan has two objectives, one of which is to increase breeding pair numbers and productivity, across the Atlantic coast. Achieving a five-year average productivity of 1.5 fledged chicks per pair in each of the four recovery units is one of the five critera by which attainment of the plover's two objectives will be measured. Specific recovery actions, such as fencing nest sites, support the productivity objective. Both objectives must be met before the goal of recovery can be considered achieved.

The "**Recovery Achieved**" number discussed below in Figure 3 and Table 5 is reported individually in Appendix 1 for each species. The "Recovery Achieved" category is meant to estimate the extent to which the recovery objectives for each species has been achieved. This percentage is not the proportion of the number of discrete actions in the recovery plan that have been completed (e.g., 33 actions out of 100), and it does not mean that one of four objectives have been met. Rather, it reflects the overall progress towards the recovery goal of downlisting or delisting. For example, the first species in Appendix I (the gray bat) has a recovery achieved number of three, meaning that it is approaching the criteria set for recovery.

As summarized in Figure 3, most listed species (77%) only had 0 to 25% of their recovery objectives achieved and only 2% of the species had 76-100% of their recovery achieved.

Table 5 takes the same data that was shown in Figure 3, and categorizes it by the length of time these species have been listed, and shows that the percent of recovery achieved generally increases the longer the species have been listed. For example, species such as the gray bat which have been listed for 11 years or more, show a marked increase in the amount of recovery achieved compared to those species listed five years or less. This can be seen by looking at the first column (species listed 5 years or less) and note the zeros in the two bottom rows (51-100% recovery achieved). Now note the last column (species listed 11 years or more) and see that 12% (9% + 3%) fall into the 51 - 100% recovery achieved (last two rows). This 0 to 12% jump illustrates that the longer a species is listed, the more recovery achieved increases.

Figure 3. Summary of Recovery Achieved (data as of September 30, 2002)

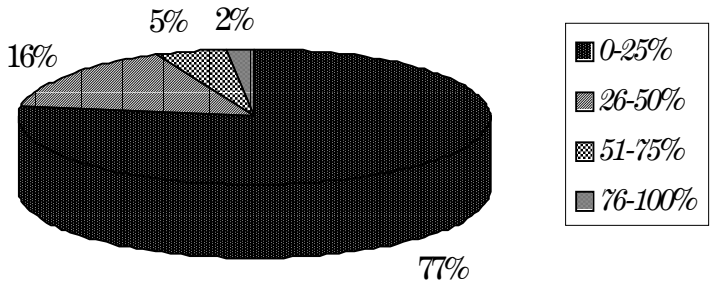


Table 5. Percent Recovery Achieved vs. Time Listed (data as of September 30, 2002)

Percent of the U.S. Species under jurisdiction of the Service (or jointly with NOAA Fisheries) with - -	*% Species listed 5 years or less*	*% Species listed 6 - 10 years*	*%Species listed 11 years or more*
0-25% Recovery Achieved	96	94	64
26-50% Recovery Achieved	4	5.5	24
51-75% Recovery Achieved	0	0.25	9
75-100% Recovery Achieved	0	0.25	3

[5] Some endangered species may only be recovered to the point of downlisting them to a threatened classification.

Conclusion

There are conclusions that can be drawn about the Recovery Program, not just from the data presented, but together with the insight we have gained from the SCB study, the IG's review, and our experience in implementing recovery. They are…

Even with increasing workload we have continued to make progress and we must continue to do so.
The percentage of stable or increasing species has remained relatively constant since 1990 (see Figure 1) even though the number of U.S. listed species more than doubled from 558 (in 1990) to 1,256 (in 2002).

We must continue to encourage voluntary conservation partnerships.
The majority of the habitat for listed, candidate, and at-risk species is on property owned by non-federal entities. We are currently developing a Recovery Implementation Database to help identify opportunities for partnerships.

We must improve our abilities to reach out to the private sector and garner their support.
We recognize that recovery actions may impact local communities and the people who live and work in them. Educating the public, working in partnership with the private sector, and using creative and innovative measures are essential to putting forward recovery on a national scale.

Federal partners are the key to many species' ultimate recovery success.
Many of the Department of Defense installation lands have become the last remaining stronghold of threatened and endangered plants, and even these places are coming under increased pressure from surrounding urban encroachment. Working closely and cooperatively with all of our Federal partners will become increasingly important as financial resources become more limited.

We must continue to work closely with our international partners.
Species whose ranges straddle international boundaries are increasingly becoming at risk. Only through cooperative efforts will those species benefit. We must continue to work with our North American partners through the Canada/U.S./Mexico Trilateral Committee for Wildlife and Ecosystem Conservation and Management, the North American Commission for Environmental Cooperation, and the Canada/U.S. Framework for Cooperation in the Protection and Recovery of Wild Species at Risk.

We must continue to support the collection, interpretation of best science on which to base our decisions, and continue to use outside experts.
More and more we need to rely on external sources for information and expertise. Supporting applicable research and encouraging review of information will better the foundation upon which our decisions are made.

We must continue to provide to our staff better guidance and training.
To keep up with emerging scientific concepts and the ever-increasing need to support our decisions to withstand legal challenges, we recognize that our staff need continued support. Our current efforts at improving guidance are just one step in meeting this challenge.

We must continue to listen to our critics.
The SCB study and the IG review indicated what has worked in the Recovery Program and where we need improvement. We will continue to implement the suggestions offered by these two groups and look for additional methods to ensure success of species' recovery.

Increase the involvement of conservation organizations, states, and academia in the recovery of listed species.
Daily, we confront the reality that the Service alone cannot achieve recovery of all listed species. Many conservation organization or State programs are already tailored to meet many of the needs of listed species and we must learn to capitalize on their expertise and resources. As well, we should reach out to academia to help meet research goals. All three of these types of groups have potentially large rolls to play in the implementation of recovery activities and could boost the success of species' recovery programs.

The northern population of bog turtle was listed as threatened in 1999. USFWS photo.

The endangered Delmarva fox squirrel is found in Delaware, Maryland, and Virginia. USFWS photo.